

## Research Article

# Awareness of gestational diabetes mellitus among pregnant women attending a government hospital

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### **ABSTRACT**

**Background & Objectives:** Gestational Diabetes Mellitus (GDM) is a common metabolic disorder in pregnancy associated with significant maternal and neonatal complications. Low awareness among pregnant women increases health risks for both mother and child. Assessing awareness can promote better self-care, prevention, and management. This study aimed to evaluate awareness of gestational diabetes mellitus among pregnant women attending a government hospital.

**Materials and Methods:** A cross-sectional study design was adopted. Non-probability purposive sampling technique was used to collect data among 100 pregnant women who met the inclusion criteria. Self-developed structured interview schedule was used to collect the data. Data processing was done by using Statistical Package for Social Science version 16. Both descriptive and inferential statistics were used in

the study. In descriptive statistics, number, percentage, mean and standard deviation were used to describe socio-demographic, obstetric and maternal variables. In inferential statistics, Chi square test was used to find out the association between dependent and independent variables.

**Results:** The finding of this study showed that nearly one third of the respondents (30.0%) had good level of awareness on Gestational Diabetes Mellitus while 48.0% of respondents had moderate level of awareness and 22.0% of respondents had less awareness. Gravida was statistically significant relationship between awareness level of Gestational Diabetes Mellitus.

**Conclusions:** This study concluded that awareness regarding Gestational Diabetes Mellitus was higher in most of the pregnant women and health personnel were identified as the primary source of information. These findings emphasized the need for targeted interventions to enhance awareness on Gestational Diabetes Mellitus.

**Keywords:** Awareness, Gestational Diabetes Mellitus, Government Hospital Pregnant women

### **INTRODUCTION**

Gestational diabetes mellitus (GDM) is a pregnancy-related form of hyperglycemia caused by changes in maternal glucose metabolism and insulin sensitivity [1].

Globally, the International Diabetes Federation estimates that 16.8% of live births are affected by hyperglycemia in pregnancy, with 84% attributed to GDM. The overall prevalence of GDM is 14.0%, rising to 20.8% in South-East Asia [2].

Major risk factors include low physical activity, advanced maternal age, obesity, and a family history of diabetes [3]. GDM is associated with significant maternal complications such as caesarean delivery and hypertensive disorders, as well as neonatal complications including macrosomia, hypoglycemia, and birth injuries [4]. Women with GDM are also at increased risk of recurrence in future pregnancies and of developing type 2 diabetes later in life [5].

In Nepal, the prevalence of GDM is reported at 2.61%, increasing to 6.56% using IADPSG criteria [6]. Despite this rising burden, awareness remains low. Studies from India show that only 6.30% of pregnant women were aware of GDM, while others reported varying levels of awareness, with a significant proportion having limited knowledge [7,8].

Low awareness of GDM poses serious risks to both mother and child. Improving knowledge about risk factors, screening, management, and complications is essential for better self-care and prevention [9,10]. Given the increasing prevalence and limited awareness in Nepal, this study aimed to assess the awareness of GDM among pregnant women attending a government hospital in Sankhuwasabha.

## **MATERIALS AND METHODS**

A cross-sectional research design was conducted among pregnant women at specific time. It was used to find out the awareness at  
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a single point of time. The study was conducted in a government hospital, Sankhuwasava. This district hospital serves a broad catchment area and is accessible to a diverse population, including women from various backgrounds. GDM is a condition that may arise during the pregnancy and can cause adverse effects on maternal, perinatal and neonatal outcomes. So, awareness of pregnant women in regard to GDM is very important to decrease the adverse effects of GDM. Pregnant women who visit for antenatal check-up in district hospital Sankhuwasava and who are willing to participate in the study and those pregnant women who are diagnosed as gestational diabetes mellitus and who are known case of diabetes mellitus are exclude from the study.

Purposive sampling technique was used for data collection among 100 pregnant women. Structured interview schedule was used for data collection. Data collection was done from May to June 2024. Proposal approval was obtained from Research Management Committee (RMC) of Biratnagar Nursing Campus (Ref: 389/080/081). Administration approval was obtained from related hospital for data collection (Ref: 1266/080/081). After getting permission from concerned authority, data collection was proceeded. Written informed consent was obtained from each respondent. Respondents' autonomy was respected throughout the research period. Confidentiality of respondents was maintained by coding the data. Obtained information was used for the research purpose only. Respondents' participation was voluntary and could discontinue at any point during the data collection period.

After finishing the interview each respondent's queries regarding GDM was explained. Collected data was checked for the

Rai & Chaudhary

completeness, accuracy at daily basis at the end of the data collection. Data was edited, coded and entered statistical package for the social sciences (SPSS) 16 version and then reported in word program. Descriptive statistics was calculated by number, percent, mean and standard deviation. For the inferential statistics, Chi square test was used to find out the association between dependent and independent variable.

## RESULTS

Table 1 shows that the mean age of respondents was  $25.29 \pm 5.22$  years; 51.0%

were below 25 years and 49.0% were above 25 years. Most respondents (62.0%) resided in urban areas. The majority were Janajati (79.0%), followed by Brahmin/Chhetri (9.0%), and 63.0% were Hindu. Almost all respondents (95.0%) were literate, and 64.0% were unemployed. Most (65.0%) belonged to joint families, and 93.0% were from the middle class.

More than half of the respondents (56.0%) were multiparous. Regarding trimester of pregnancy, 60.0% of them were in third trimester whereas 29.0% were in second trimester and 11.0% were in first trimester of pregnancy. Regarding family history of

<b>Table1: Respondents' Sociodemographic Characteristics (n=100)</b>		
<b>Variables</b>	<b>Number</b>	<b>Percent</b>
<b>Age</b>		
<25	51	51.0
≥25	49	49.0
Mean±SD= 25.29±5.221		
<b>Residence</b>		
Urban	62	62.0
Rural	38	38.0
<b>Ethnicity</b>		
Brahmin/Chhetri	9	9.0
Janajati	79	79.0
Others#	12	12.0
<b>Religion</b>		
Hindu	63	63.0
Non-Hindu	37	37.0
<b>Education</b>		
Illiterate	5	5.0
Primary school	8	8.0
Secondary school	57	57.0
More than secondary	30	30.0
<b>Occupation</b>		
Profession	3	3.0
Semi profession	5	5.0
Clerical/shop/farm	22	22.0
Skilled worker	6	6.0
Unemployed	64	64.0
<b>Type of family</b>		
Nuclear	35	35.0
Joint	65	65.0
<b>Socioeconomic status</b>		
Upper	-	-
Middle	93	93.0
Lower	7	7.0

diabetes mellitus, most of the respondents (83.0%) had no history of diabetes mellitus in family. Concerning about history of taking pre-conception care, majority of respondents (27.0%) had not taken preconception care while 85.0% of respondents had history of antenatal screening for random blood sugar test. Among multiparous women, 4 of the respondents had history of abortion. So, the number of respondents who delivered child was 52 and among 52 of the respondents, only 1.9% of the respondents had history of delivering a macrosomia child (Table 2).

Table 3 depicted that the source of information related to GDM in which major source of information was health personnel (53.0%) followed by internet (48.0%) whereas less common source of information was newspaper (10.0%).

In table 4, half (50.0%) of respondents were aware of the meaning of GDM, and 60.0% knew it can first occur during pregnancy. Regarding risk factors, 65.0% identified prepregnancy obesity, 50.0% reduced physical activity, 59.0% family history, 66.0% past history of GDM, 54.0% age, and 47.0%

**Table 2: Respondents' Maternal and Obstetric Characteristics (n=100)**

Variables	Number	Percent
<b>Gravida</b>		
Primi	44	44.0
Multi	56	56.0
<b>Trimester</b>		
First	11	11.0
Second	29	29.0
Third	60	60.0
<b>History of diabetes mellitus in family</b>		
Yes	17	17.0
No	83	83.0
<b>History of taking preconception care</b>		
Yes	27	27.0
No	73	73.0
<b>History of antenatal screening for random blood sugar test</b>		
Yes	85	85.0
No	15	15.0
<b>History of delivering macrosomia child (n=52)</b>		
Yes	1	1.9
No	51	98.1

**Table 3: Source of Information related to GDM (n=100)**

Variable	Number	Percent
Source of information*		
Radio	32	32.0
TV	20	20.0
Internet	48	48.0
Friends	41	41.0
Relatives	44	44.0
Books	24	24.0
Newspaper	10	10.0
Health personnel	53	53.0

\*Multiple response question

rapid weight gain during pregnancy. Concerning clinical features, 35.0% identified excessive thirst, 44.0% excessive urination, 29.0% excessive sweating, 5.0% excessive fatigue, and 45.0% blurred vision. In terms of screening, 89.0% reported that testing during pregnancy is necessary, but only 10.0% had

heard of the oral glucose tolerance test. Regarding treatment, 89.0% identified diet modification, 78.0% exercise, 60.0% drug therapy, and 41.0% believed GDM resolves after pregnancy.

For complications, 90.0% were aware that

**Table 4: Awareness of Respondents on GDM (n=100)**

Variables	Yes		No		Don't know	
	N	%	N	%	N	%
Gestational diabetes mellitus is a condition of high blood sugar that develops in women during pregnancy	50	50.0	17	17.0	33	33.0
Diabetes mellitus can occur for the first time in pregnancy	60	60.0	6	6.0	34	34.0
Pre pregnancy obesity is a risk factor of gestational diabetes mellitus	65	65.0	5	5.0	30	30.0
Reduced physical activity is a risk factor of gestational diabetes mellitus	50	50.0	7	7.0	43	43.0
Family history of diabetes is a risk factor of gestational diabetes mellitus	59	59.0	18	18.0	23	23.0
Past history of gestational diabetes is a risk factor in subsequent pregnancies	66	66.0	12	12.0	22	22.0
Age is a risk factor of gestational mellitus	54	54.0	9	9.0	37	37.0
Rapid weight gain in pregnancy is a risk factor of gestational diabetes mellitus	47	47.0	11	11.0	42	42.0
Excessive thirst is a clinical feature of gestational diabetes mellitus	35	35.0	21	21.0	44	44.0
Excessive urination is a clinical feature of gestational diabetes mellitus	44	44.0	19	19.0	37	37.0
Excessive sweating is a clinical feature of gestational diabetes mellitus	29	29.0	23	23.0	48	48.0
Excessive fatigue is a clinical feature of gestational diabetes mellitus	5	5.0	13	13.0	32	32.0
Blurred vision is a clinical feature of gestational diabetes mellitus	45	45.0	19	19.0	36	36.0
It is necessary to test for diabetes in pregnancy	89	89.0	3	3.0	8	8.0
Heard about blood test for diabetes after oral glucose intake	10	10.0	84	84.0	6	6.0
Gestational diabetes mellitus can be treated with diet modification	89	89.0	3	3.0	8	8.0
Gestational diabetes mellitus can be treated with exercise	78	78.0	4	4.0	18	18.0
Drugs are required for the treatment of gestational diabetes mellitus	60	60.0	21	21.0	19	19.0
Gestational diabetes mellitus resolves after pregnancy	41	41.0	30	30.0	29	29.0
Untreated gestational diabetes mellitus can cause maternal complications in pregnancy	90	90.0	1	1.0	9	9.0
There is a risk of delivering a macrosomia baby by a mother with gestational diabetes mellitus	90	90.0	21	21.0	41	41.0
There is a risk of hypoglycemia in baby of mother with gestational diabetes mellitus	53	53.0	10	10.0	37	37.0
Gestational diabetes mellitus can cause jaundice in newborns	68	68.0	4	4.0	28	28.0
Gestational diabetes mellitus cause type 2 diabetes mellitus in future	80	80.0	1	1.0	19	19.0

untreated GDM can cause maternal complications, 90.0% recognized the risk of macrosomia, and 80.0% knew it can lead to type 2 diabetes mellitus in the future.

Table 5 indicated that the one third of the respondents (30.0%) had good level of awareness on GDM while 48.0% of respondents had moderate level of awareness and 22.0% of respondents had less awareness.

**Table 5: Level of Awareness on GDM (n=100)**

Level of Awareness	Number	Percent
Good	30	30.0
Moderate	48	48.0
Less	22	22.0

pregnant women. Those engaged in the study were aged between 16 and 38, with an average age of 25.29± 5.221 years. In regard to residence, majority of respondents (62%) were from urban area. Concerning about ethnicity, most of the respondents (79%) were Janajati. In regard to Religion, Hinduism was followed by 63% of respondents. Almost of the respondents (95%) were literate and more than half of respondents (57%) attended secondary school. Regarding employment status, 64% of respondents were unemployed while 36% were engaged in some form of work.

Also, concerning about the maternal and obstetric characteristics of respondents, this study shows that 56% of the respondents

**Table 6: Association between Level of Awareness and Selected Variables (n=100)**

Variables	Level of Awareness			x <sup>2</sup>	p-value
	Good N (%)	Moderate N (%)	Less N (%)		
Age					
<25	18(35.3)	24(47.1)	9(17.6)	1.888	0.389
≥25	12(24.5)	24(49.0)	13(26.5)		
Residence				.107	0.948
Urban	19(30.6)	30(48.4)	13(21.0)		
Rural	11(28.9)	18(47.4)	9(23.7)		
Religion				3.442	0.179
Hindu	15(23.8)	34(54.0)	14(22.2)		
Non-Hindu	15(40.5)	14(37.8)	8(21.6)		
Type of family				1.445	0.485
Nuclear	9(25.7)	16(45.7)	10(28.6)		
Joint	21(32.3)	32(49.2)	12(18.5)		
Gravida				7.159	0.028**
Primi	18(40.9)	21(47.7)	5(11.4)		
Multi	12(21.4)	27(48.2)	17(30.4)		

x<sup>2</sup> Chi-square value

\*\*p-value<0.05 shows association using chi-square

Table 6 represents that the gravida was statistically significant association between level of awareness on GDM (p=0.028).

## DISCUSSION

This cross-sectional research was conducted to find out awareness of GDM among 100

were multiparous and majority of respondents (60%) were in their third trimester. Around one fourth of respondents (27%) had taken preconception care and most of the respondents (85%) had screened for random blood sugar test. In regard with source of information related to GDM, health personnel was the major source of

information as indicated by 53% and rest through other sources like internet, relatives, friends, radio, books, TV, newspaper which is similar to the study in Mufulira town, Zambia among antenatal women, where major source of information related to GDM was medical practitioner (50%) [1].

This study shows that less than one third of the respondents (30%) had good level of awareness on GDM while 48% of respondents had moderate level of awareness and 22% of respondents had less awareness. The findings was supported by a study conducted among 250 pregnant women in government and private hospitals of Beawar region, India, overall 24% respondents had good knowledge, 54% has little knowledge and 22% had weak knowledge [8]. These findings are in contrast with a study where only 6.3% were aware of GDM and majority (93.6%) were unaware of the condition [7]. This might be due to difference in settings, sample size, educational level and difference in questionnaires used between two studies.

In the present study half of the respondents (50.0%) were aware about the meaning of GDM. Majority of the respondents (60.0%) knew that diabetes mellitus can occur for the first time in pregnancy. Also, concerning about risk factors of GDM, more than half of the respondents (65.0%), were aware about pre-pregnancy obesity and 66.0% were aware about GDM history as the risk factors of GDM. This finding is coherent with the study conducted in India, where 60.0% of respondent answered obesity as a risk factor and 48.8% answered GDM history as risk factor of GDM in future pregnancy [8].

In addition, the study findings reveal that only few of the respondents were aware of clinical features of GDM, such as excessive thirst (35%), excessive urination (44%) and excessive fatigue (5%) which is supported by

the study conducted by Arusha city, Tanzania among pregnant women attending antenatal clinics, in which 74% respondents were unaware of clinical features [1].

In regard to awareness on screening for GDM, most of the respondents (89%) agreed that it is necessary to test for diabetes in pregnancy. However, only 10% had heard about oral glucose tolerance test for screening of GDM which is aligned with the findings of study conducted in Saudi Arabia where only 9.7% respondents knew about oral glucose tolerance test [18].

In regard to treatment of GDM, the study reveals that most of the respondents responded GDM can be treated with diet modification (89%) and exercise (78%). This resembles to the findings of study conducted in Tamil Nadu where 77% were aware of the treatment option as diet and exercise and 33%, In addition, 41% respondent agreed that GDM resolves after pregnancy whereas 33% of respondent believed GDM to disappear after pregnancy in a study of Tamil Nadu [9].

In relation to awareness on complications of GDM, the present study showed that almost all of the respondents (90%) were aware about risk of maternal complications and risk of delivering a macrosomia baby due to GDM, and most of the respondents (80%) replied that there is a risk of developing type 2 diabetes mellitus in future. This finding has discrepancy with a study conducted in Tanzania where 77% of the respondents were unaware of the effects of GDM [1]. This discrepancy may be due to poor role of health personnel in educating the pregnant women during their antenatal visit as it was reported in the study of Tanzania that the major source

of information regarding GDM was social media and not health personnel.

Furthermore, the present study revealed that there is statistically significant relationship between gravida and level of awareness related to GDM (p-value= 0.028) This finding was consistent with a study conducted in Jeddah, Saudi Arabia which showed that respondents who were multiparous were more aware of GDM than primiparous (p-value=0.014) [19].

### CONCLUSIONS

This study concluded that awareness regarding GDM was higher in most of the pregnant women. Gravida tends to be associated with level of awareness. Health personnel were identified as the primary source of information. These findings emphasized the need for targeted interventions to enhance awareness on Gestational Diabetes Mellitus.

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